

Appl. No. 09/745,385

Reply to Non-Final OA dated May 19, 2005

AMENDMENTS TO THE CLAIMS

Claims 2-5, 7-11, 13-15, 17-20, 22-24, 26-30, 32-34, 38-43, and 45-47 were originally pending. Please amend claims 27 through 30. Please cancel claims 4, 5, 9, 10, 26, and 47 without prejudice. In view of these amendments, claims 2, 3, 7, 8, 11, 13-15, 17-20, 22-24, 27-30, 32-34, 38-43, 45, and 46 remain pending.

The following listing of claims replaces all prior versions and listings of claims in the application.

1. (Canceled)

2. (Previously presented) A method comprising:

receiving, by a USB device, a host-specific device request from an application executing on a computing device coupled to the USB device;

identifying, by the USB device, a host-defined string descriptor defined by the application, the host-defined string descriptor being stored in firmware of the USB device; and

wherein the host-defined string descriptor comprises a custom property section comprised of one or more custom property entries, each custom property entry comprising information that corresponds to a respective custom property for the USB device.

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1 3. (Previously presented) A method as recited in claim 2, wherein the
2 host-defined string descriptor further comprises:

3 a header section comprising an indication of the number of custom property
4 entries for which mappings exist in the custom property section.

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6 4-6. (Canceled)

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8 7. (Previously presented) A method comprising:

9 querying, by a computing device coupled to a USB device, the USB device
10 with a host-specific device request for a host-defined string descriptor associated
11 with user interface information stored in firmware of the USB device;

12 responsive to the querying, receiving by the computing device, at least a
13 portion of the user interface information; and

14 wherein the host-defined string descriptor comprises a custom property
15 section comprised of one or more custom property entries, each custom property
16 entry comprising information that corresponds to a respective custom property for
17 the USB device.

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19 8. (Previously presented) A method as recited in claim 7, wherein the
20 host-defined string descriptor further comprises a header section comprising an
21 indication of the number of custom properties property entries for which mappings
22 exist in the custom property section.

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24 9-10. (Canceled).

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11. (Previously presented) One or more computer-readable media containing a computer executable program that performs a method as recited in claim 7.

12. (Canceled)

13. (Previously presented) In a USB device that responds to device requests from a host, the device requests including USB-specific device requests with corresponding USB-specified request codes and device-specific device requests with corresponding device-specified request codes, the USB-specific device requests including a GET_DESCRIPTOR device request with a corresponding GET_DESCRIPTOR request code, a method comprising:

receiving a GET_DESCRIPTOR device request that specifies a predetermined index, the GET_DESCRIPTOR device request having been received from an application executing on a remote computing device;

responding to the GET_DESCRIPTOR device request by returning a device-specific request code for subsequent use by the USB device to send an extended property descriptor responsive to subsequent receipt of a host-specific device request from the remote computing device, the extended property descriptor specifying user interface information corresponding to the USB device and provided by a vendor as being in a data format compatible with the application; and

wherein the user interface information comprises a custom property section comprised of one or more custom property entries, each custom property entry

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1 comprising information that corresponds to a respective custom property for the
2 USB device.

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4 14. (Previously presented) A method as recited in claim 13, wherein the
5 user interface information further comprises

6 a header section comprising an indication of the number of custom
7 properties property entries for which mappings exist in the custom property
8 section.

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10 15. (Previously presented) One or more computer-readable media
11 containing a computer executable program that performs a method as recited in
12 claim 13.

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14 16. (Canceled)

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16 17. (Previously presented) A method comprising:

17 communicating, by a component of an operating system, a non-standard
18 USB device request to a device, the non-standard USB device request requesting
19 an extended property from the device, the extended property providing data that is
20 predetermined to be compatible for use by the component or the operating system,
21 the data comprising user interface information associated with the USB device;

22 responsive to the communicating, receiving, by the component, an extended
23 property descriptor from the device, the extended property descriptor comprising
24 at least the extended property; and
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1 augmenting, by the operating system, a shell or user interface at the remote
2 computing device to represent the USB device.

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4 18. (Previously presented) A method comprising:
5 communicating, by a component of an operating system, a non-standard
6 USB device request to a device, the non-standard USB device request requesting
7 an extended property from the device, the extended property providing data that is
8 predetermined to be compatible for use by the component or the operating system,
9 the data comprising user interface information associated with the USB device;

10 responsive to the communicating, receiving, by the component, an extended
11 property descriptor from the device, the extended property descriptor comprising
12 at least the extended property; and

13 wherein the extended property descriptor further comprises a custom
14 property section comprised of one or more custom property entries, each custom
15 property entry comprising information that corresponds to a respective custom
16 property for the USB device.

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18 19. (Previously presented) A method as recited in claim 18, wherein the
19 extended property descriptor further comprises a header section comprising an
20 indication of the number of custom properties property entries for which mappings
21 exist in the custom property section.

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1 20. (Previously presented) A method comprising:
2 communicating, by a component of an operating system, a non-standard
3 USB device request to a device, the non-standard USB device request requesting
4 an extended property from the device, the extended property providing data that is
5 predetermined to be compatible for use by the component or the operating system,
6 the data comprising user interface information associated with the USB device;
7 responsive to the communicating, receiving, by the component, an extended
8 property descriptor from the device, the extended property descriptor comprising
9 at least the extended property and user interface information corresponding to the
10 USB device; and
11 responsive to receiving the extended property descriptor, providing
12 information corresponding to the user interface information to one or more
13 computer program applications.

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15 21. (Canceled)
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1 22. (Previously presented) A USB device comprising:
2 a processor;
3 a port coupled to the processor;
4 a memory coupled to the processor;
5 an extended property descriptor stored in the memory, the extended
6 property descriptor identifying a set of user interface information corresponding to
7 the USB device and in a data format predetermined to be compatible for use by a
8 requesting application executing on a remote computing device, the extended
9 property descriptor further comprising a custom property section comprised of one
10 or more custom property entries, each custom property entry comprising
11 information that corresponds to a respective custom property for the USB device;
12 and

13 a control program module stored in the memory, the control program
14 module being configured to send the extended configuration descriptor to a
15 requestor in response to receiving a host-specific device request at the port.

16
17 23. (Previously presented) A USB device recited in claim 22, wherein
18 the extended property descriptor further comprises

19 a header section comprising an indication of the number of custom
20 properties property entries for which mappings exist in the custom property
21 section.

22
23 24. (Previously presented) A USB device recited in claim 22, wherein
24 the set of user interface information is in a data format specified in anticipation of
25 its compatible use by an operating system.

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25-26. (Canceled)

27. (Currently amended) ~~A computer-readable storage medium as recited in claim 26;~~ A computer-readable storage medium comprising computer-executable instructions utilized by an application program to interact with a USB device, wherein the computer-executable instructions comprise:

receiving a request from an application program for a property descriptor that specifies user interface information in a data format predetermined to be compatible for use by the application program and corresponding to the USB device;

querying the USB device with a host-specific device request to obtain the property descriptor;

responsive to the querying, receiving the property descriptor, wherein the property descriptor comprises comprising one or more custom property sections, each custom property section indicating information corresponding to a user interface element for the USB device;

providing the property descriptor to the requesting application program;

and

augmenting, by the application program, a shell or user interface with the user interface information for presentation to a user.

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28. (Currently amended) ~~A computer-readable storage medium as recited in claim 26;~~ A computer-readable storage medium comprising computer-executable instructions utilized by an application program to interact with a USB device, wherein the computer-executable instructions comprise:

receiving a request from an application program for a property descriptor that specifies user interface information in a data format predetermined to be compatible for use by the application program and corresponding to the USB device;

querying the USB device with a host-specific device request to obtain the property descriptor;

responsive to the querying, receiving the property descriptor, wherein the property descriptor comprises: comprising:

(a) a header section indicating the number of custom properties for which mappings exist in the property descriptor; and

(b) one or more custom property sections, each custom property section indicating information corresponding to a user interface element for the USB device;

providing the property descriptor to the requesting application program;

and

augmenting, by the application program, a shell or user interface with the user interface information for presentation to a user.

29. (Currently amended) A computer-readable storage medium as recited in claim 27 26, wherein the user interface information is selected from information comprising an icon, a font, a picture, a label, a help page, or a URL.

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2 30. (Currently amended) A computer comprising one or more computer-
3 readable media as recited in claim 27 26.

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5 31. (Canceled)

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7 32. (Previously presented) One or more computer-readable media
8 containing a computer-executable program for use in conjunction with a USB
9 device that responds to device requests from the program, the device requests
10 including USB-specific device requests with corresponding USB-specified request
11 codes and device-specific device requests with corresponding device-specified
12 request codes, the program comprising:

13 receiving a host-specific request for an extended property descriptor from a
14 requestor, the extended property descriptor indicating one or more user interface
15 elements that correspond to the USB device, the extended property descriptor
16 further comprising a custom property section that corresponds to a user interface
17 element of the one or more user interface elements, the one or more user interface
18 elements being predetermined to be compatible for use by an application
19 executing or for execution on a remote computing device; and

20 responsive to the receiving, communicating the extended property
21 descriptor to the requestor.
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1 33. (Previously presented) One or more computer-readable media as
2 recited in claim 32, wherein the extended property descriptor further comprises a
3 header section indicating the number of custom properties for which mappings
4 exist in the property descriptor.

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6 34. (Previously presented) A computer comprising one or more
7 computer-readable media as recited in claim 32.

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9 35 - 37. (Canceled).

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11 38. (Previously presented) A method as recited in claim 2, and further
12 comprising communicating, by the USB device, the host-defined string descriptor
13 to the application.

14
15 39. (Previously presented) A method as recited in claim 2, wherein the
16 host-defined string descriptor comprises information in a data format specified by
17 a host of the USB device.

18
19 40. (Previously presented) A method as recited in claim 2, wherein the
20 host-defined string descriptor comprises user interface elements for presentation
21 by the application to a user for interfacing with the USB device.

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23 41. (Previously presented) A method as recited in claim 2, wherein the
24 host-defined string descriptor comprises one or more user interface elements such
25 as an icon, a font, a picture, a label, a help page, or a URL.

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1 42. (Previously presented) A method as recited in claim 2, wherein the
2 host-defined string descriptor comprises information for one or more user interface
3 elements in a data format specified by a host of the USB device.

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5 43. (Previously presented) A method as recited in claim 2, wherein the
6 application is an operating system.

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8 44. (Canceled)

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10 45. (Previously presented) A method as recited in claim 7, wherein the
11 method further comprises displaying, by the computing device, a set of user
12 interface elements specified by the at least a portion to present a user interface
13 appropriate to the USB device to a user.

14
15 46. (Previously presented) A method as recited in claim 13, wherein the
16 application is an operating system.

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18 47. (Canceled).